USSR

GRIGOR'YEV, Yu. G., FARBER, Yu. V., and VOLOKHOVA, N. A.

Vestibulyarnyye reaktsii (Metody issledovaniya i vliyaniya razlichnykh faktorov vneshney sredy) (Vestibular Reactions [(Methods of Investigation and the Effect of Various Factors in the External Environment)

Moscow, "Meditsina", 1970, 196 pp

Translation: Annotation: This monograph reports data on the quantitative characteristics of the sensitivity and reactivity of the vestibular analysor. It describes the nature of the functional connection between the intensity of vestibular reactions and the magnitudes of various parameters of adequate stimuli (strength, duration) of the nonaural part of the labyrinth. A special section contains data on the nature of the organism's reactions, on the characteristics of adaptation, of shifts in the sensitivity and reactivity of the vestibular analysor during the prolonged (up to 15 days) periodic effect of Coriolis accelerations. An analysis is made of the motion-sickness syndrome which occurs when a person remains in a rotation chamber. The urgency of the present investigation is conditioned, apart from its general physiological significance, by the prospects of creating artificial gravity on space vehicles.

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GRIGOR'YEV, Yu. G., et al, "Meditsina", 1970, 196 pp

Material is examined regarding the effect on the vestibular analysor of a number of other environmental factors, principally the effect of ionizing radiation. The dynamics of the development of radiation injury of the vestibular analysor has been traced and the degree of resistance of the compensatory processes has been evaluated. Experiments set up during acute and chronic irradiation in small and large doses make it possible to draw conclusions about the sensitivity of the vestibular analysor to ionizing radiation and also about the possible reactions of the organism in the event of their occurrence. Observations were made using modern methods of investigating vestibular function (cupulometry and electrographic recording of reactions). From the Authors. Questions relating to the study of vestibular analysor function have been worked out for many decades. A great quantity of published works has recently appeared in the Soviet Union and abroad regarding one or another aspect of vestibular analysor function. The perfection of vestibular measuring methods, based on the application of an adequate stimulation of the sense organs of the vestibular analysor, has helped make possible the considerable success attained in that area of physiology. It must be emphasized once again that the successes now being achieved by Soviet labyrinthologists in the study of vestibular analysor function represent the harmonious continuation of the

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work of such researchers as S. P. Shteyn, V. I. Voyachek, K. L. Khilov, V. F. Undrits, and A. Kh. Min'kovskiy. The study of the function of the nonaural part of the labyrinth, especially the cupular apparatus, has great scientific and practical significance. Data on the nature of vestibular reactions of the organism in response to the effect of angular accelerations are equally of interest to space medicine specialists and otologists and neuropathologists. The authors of the present monograph, which is being brought to the attention of readers, have for a number of years made a study of vestibular reactions in clinical and experimental studies of the effect on the organism of various environmental factors. As a result a great deal of factual material has been accumulated which may be useful to a great many specialists. We consider it our pleasant duty to express sincere thanks to N. I. Arlashchenko, B. B. Bokhov, V. A. Galichego and V. S. Sveshnikov, who participated in individual phases of the work.

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GRIGOR'YEV, Yu. G., et al, "Meditsina", 1970, 196 pp

PREFACE. As so often happens, heightened interest in understanding some phenomenon or other is inevitably accompanied by the growth of technical capabilities making experimentation possible. Suitable examples have been cited in abundance, but it is enough to recall the evolution of the working concepts of visual and auditory analysors. As a result, researchers have long been equipped with reliable quantitative criteria for evaluating the functional state of those systems. At the present time, an analagous process is also underway in the study of vestibular analysor function. It can be said with complete conviction that this field of analysor physiology is now studied least of all. One of the reasons for such a situation is the specific lag, until recently, in the development of vestibulometry. Due to the efforts of Soviet and foreign investigators, labyrinthologists are today equipped with methods of procedure which permit the objective study of the vestibular analysor on a rigidly quantitatibe basis. As a result, researchers in the physiology of this analysor system are now rapidly accumulating facts characterizing its basic activity. It is obvious that, lacking the concepts of the basic functional characteristics of the vestibular analysor, it is difficult to study its function under the influence of various environmental factors. Notwithstanding the great amount of work expended on this question, many of

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its aspects require more exact definition and further investigation. In physiology textbooks and manuals, the sections dealing with vestibular analysor function are treated very inadequately. It is therefore fitting to welcome the appearance of works which summarize the experimental data on the physiology of analysor systems. As a result of the experiments conducted by the authors, additional facts were obtained which described the sensitivity and reactivity of the vestibular analysor of experimental animals and of man. Special sections deal with the significance of the time factor in the action of adequate stimuli in arousing vestibular reactions, and also deal with questions of interrelationships between various components. (see chapters I-III). The rapid development of space medicine and biology made necessary a detailed and still wider study of some areas of physiology. Among the various questions in modern space physiology, the study of vestibular analysor function occupies a central place. Available information permits the assumption that a prolonged state of weightlessness can exert a definite influence on the vital activity and behavior of cosmonauts. In this connection it is practicable to create a spaceship with artificial gravity by rotating it around its own axis. In this case, man is confronted with Coriolis accelerations, an adequate stimulus

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of the vestibular analysor. Research in this direction is fairly recent and the information available on this question is still insufficient. A special section of the monograph contains data about the organism's reactions, adaptation characteristics, and shifts in the sensitivity and reactivity of the vestibular analysor during the prolonged effect (up to 15 days) of periodic Coriolis accelerations. An analysis is made of the motion-sickness syndrome, which occurs when a person stays in a slowly rotating chamber. The urgency of the present investigation is determined, apart from its general physiological significance, by the prospects of creating artificial gravity in space vehicles. Numerous observations indicate that the effect on an organism of stimuli which are not adequate for the vestibular analysor can substantially alter the functional state of the vestibular analysor. Data on the effect of ionizing radiation on the vestibular analysor are also presented (see Chapter V). Data is analyzed regarding the effect on the vestibular analysor of a number of other environmental factors and above all of ionizing radiation. The dynamics of radiation injury of the vestibular analysor is traced and the degree of resistance of the compensatory processes is evaluated. Experiments conducted with acute or chronic irradiation in small and large doses make it possible to draw conclusions about the sensitivity of the vestibular analysor

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to ionizing radiation, and also about the possible reactions of the organism. Some of the data deals with the reaction of a person to small doses of radiation when a number of physical environmental factors are acting simultaneously. Particular attention should be paid to the authors' suggestion that the vestibular analysor is a critical organ, on the basis of permissible levels of radiation during spaceflight. All of the observations were made on people and experimental animals using modern methods of investigating vestibular function (cupulometry and electrographic recording of reactions).

Academician V. V. Parin

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Acc. Nr: AP0044383

Ref. Code: UR 0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 1, pp 3-8

KINETIC CHARACTERISTICS OF CHEMILUMINESCENCE APPEARING IN REACTION OF DNA WITH *N*-ACETYLETHYLENEIMINE

Zybina, D. L.; Volokitina, K. S.; Kruglyakova, K. Ye.; Emanuel', N. M.

Institute of Chemical Physics, Academy of Sciences, USSR, Moscow

Chemiluminescence was revealed in the course of reaction of DNA with *N*-acetylethyleneimine. Kinetic curve for the chemiluminescence indicated that intermadiate products did appear in the system. The dependence was found of the intensity and the rate constant of chemiluminescence upon the concentrations of reagents and temperature. The chemiluminescence was shown to be due to oxidation processes. The decrease in the chemiluminescence intensities under the action of free-radical reaction inhibitors made it possible to suggest the radical nature of the chemiluminescence occurring in the course of the reaction between DNA and *N*-acetylethyleneimine.

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02 Bc

REEL/FRAME
19770999

1/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--RADIOACTIVE AEROSOL DISTRIBUTION IN THE MIDDLE AND UPPER TROPHOSPHERE OVER THE USSR IN 1963-1968 -U-

AUTHOR-(05)-NAZAROV, L.E., KUZENKOV, A.F., MALAKHOV, S.G., VOLOKITINA, L.A., GAZIEV, YA.I.

COUNTRY OF INFO--USSR

SOURCE--J. GEOPHYS. RES. 1970, 75(18), 3575-88

DATE PUBLISHED--------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--RADIOACTIVE AEROSOL, TROPOSPHERE, FISSION PRODUCT, STRATOSPHERE, JET STREAM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/0933 STEP NO--US/0000/70/075/018/3575/3588

CIRC ACCESSION NO--AP0136364

UNCLASSIFIED

2/2 026 UNCLASSIFIED

CIRC ACCESSION NO--AP0136364 PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DISTRIBUTION OF RN DAUGHTERS AND CONCN. OF AEROSOL FISSION PRODUCTS IN THE TROPOSPHERE WERE MEASURED OVER THE USSR DURING SEVERAL PERIODS FROM 1963 TO 1968. AN INTENSIVE FISSION PRODUCT TRANSPORT FROM THE STRATOSPHERE TO THE TROPOSPHERE OCCURS ON THE CYCLONIC SIDE OF THE JET STREAM. AS A RULE, THE INCLUSION OF THESE PRODUCTS IN THE SURFACE AIR IS OBSERVED ON THE ANTICYCLONIC SIDE OF THE JET STREAM. THE SIMPLEST THEORETICAL SCHEME IS GIVEN TO DESCRIBE THE VERTICAL DISTRIBUTION OF RN AND FISSION PRODUCT CONCNS. IN THE TROPOSPHERE; THE THEORY TAKES INTO ACCOUNT THE VERTICAL TURBULENT EXCHANGE COEFF. AND VERTICAL MOTION. THE DIRECTIONS OF VERTICAL MOTION, ESTD. FROM THE VERTICAL DISTRIBUTION OF BOTH RN AND FISSION PRODUCTS IN THE TROPOSPHERE, AGREE VERY CLOSELY WITH METEOROL. DATA. FACILITY: HYDROMETEOROL. SERV., INST. EXPTL. METEOROL., OBNINSK, USSR.

UNCLASSIFIED

USSR

UDC 621.315.592:546.19'681

VOLOKOBINSKAYA, N. I.

"Production of Homogenous Films of Solid Solutions in the System InAs-GaAs"

V sb. Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn in-t svyazi (Transactions of the Scientific and Technical Conference. Leningrad Electrotechnical Institute of Communication), Vyp 4, 1970, pp 23-25 (from RZH-Metallurgiya, No 11, Nov 70, Abstract No 11G423)

Translation: The method of thermovacuum evaporation with subsequent homogenization was used for producing films of solid solution in the system InAs-GaAs. An investigation was made of the electrophysical properties of films of the solution of $In_{0.86}Ga_{0.14}As$ composition. 5 bibl. entries. (from RZh A i R)

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1/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--ISOMERIZATION OF N BUTENES AND N BUTANE IN THE PRESENCE OF GROUP VIII METALS ON ALUMINUM OXIDE -U-

AUTHOR-(03)-PANCHENKOV, G.M., VOLOKOVA, G.S., ZHOROV, YU.M.

COUNTRY OF INFO--USSR

SOURCE--NEFTEKHIMIYA 1970, 10(2), 178-82

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ISOMERIZATION, BUTANE, BUTENE, METAL CATALYST, CATALYST ACTIVITY, COBALT, NICKEL, RHENIUM, PALLADIUM, PLATINUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/0958 STEP NO--UR/0204/70/010/002/0178/0182

CIRC ACCESSION NO--AP0134676

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0134676

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE METALS WERE ACTIVE CATALYSTS FOR CIS TRANS AND DOUBLE BOND ISOMERIZATION. EXCEPTING RH AND PT, THE ACTIVITIES OF THE METALS WERE SIMILAR. THE ACTIVITY OVER THE SKELETON ISOMERIZATION OF OLEFINS INCREASED: CO LESS THAN NI LESS THAN RH LESS THAN FE LESS THAN PD LESS THAN PT. AL SUB2 O SUB3-RH AND PLATFORMING CATALYSTS WERE THE MOST ACTIVE FOR HYDROGENATION. OVER AL SUB2 O SUB3,CO AND AL SUB2 O SUB3,NI AS CATALYSTS, 2 BUTENES WERE CRACKED MORE READILY THAN 1 BUTENE. THE ISOMERIZATION ACTIVITY OF THE CATALYST FOR THE ISOMERIZATION OF N,C SUB4 H SUB10 WAS INDEPENDENT OF THE METAL. FACILITY: MOSK. INST. NEFTEKHIM. GAZOV. PROM. IM. GUBKINA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 539.385

VOLONTSEVICH, O. A., CHUPRININ, F. I.

"Device for Fatigue Testing in a Vacuum Under Irradiation"

V sb. Povedeniye materialov v usloviyakh vakuuma i nizk. temperatur (Behavior of Materials Under the Conditions of a Vacuum and Low Temperatures--collection of works), Khar'kov, 1972, pp 79-82 (from RZh--Mekhanika, No 6, Jun 73, Abstract No 6V1032)

Translation: The schematic and description of the device are presented. The unit comprises three parts (vacuum, mechanical and radiation), and it has the following characteristic features: 1) the radiation sources are not rigidly related to the remaining systems of the device; 2) four specimens can be subjected to cyclic cantilever ending simultaneously (two under irradiation and two shaded); 3) for simultaneous irradiation of the backside, the device is equipped with an aluminum mirror; 4) the specimens can be changed without disturbing the vacuum in the chamber. Fatigue tests were run on copper specimens in the air and in a vacuum (with and without radiation). The life in a vacuum was an order higher than in the air. A microstructural study demonstrated that irradiation in the investigated wave range does not introduce significant changes in the nature and distribution of the plastic flow on the surface of the specimens. The bibliography has 11 entries.

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USSR

UDC: 621.383.003.3

GLAZKOV, M. M., KUZ'MICHEV, G. P., ONEGIN, Ye. Ye., VOLOS, V. F.

"A Method for Wireless Assembly of Semiconductor Devices"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 16, Jun 71, Author's Certificate No 303677, Division H, filed 1 Sep 69, published 13 May 71, p 191

Translation: This Author's Certificate introduces: 1. A method for wireless assembly of semiconductor devices. The procedure includes the operations of making contact conductor frames, connecting them to the crystals, connection to external leads, and hermetic sealing. As a distinguishing feature of the patent, the precision and reliability of assembly are improved by stamping contact leads of variable cross section on a tape with the formation of lugs on the ends of the leads, and etching the tape in an etchant solution until the tapered sections between the contact leads are eaten away. 2. A modification of this method distinguished by the fact that a reinforcement ring is fastened to the contact leads after they have been stamped on the tape.

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USSR

UDC: 621.1.396.6.002

SVIRIDOV, A. P., VOLOSATOV, V. A.

"Ultrasonic Machining of Radio Components"

Ul'trazvukovaya obrabotka radiotekhnicheskikh detaley (cf. English above), Leningrad, "Energiya", 1969, 118 pp, ill., reviewed by L. Ya. Popilov in Elektron. tekhnika. Nauchno-tekhn. sb. Tekhnol. i organiz. proiz-va (Electronic Technology. Scientific and Technical Collection. Technology and Organization of Production), 1970, vyp. 4 (36), pp 133-134 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1V263 RETs)

Translation: The book is written for production workers who need detailed information on practical problems of ultrasonic cutting. It is devoted to the techniques of ultrasonic dimensional machining of microminiature radio components. Chapter 1 outlines the fundamentals of dimensional machining; Chapter 2 describes ultrasonic converters and concentrators as well as working tools; Chapter 3 describes some designs of ultrasonic machine tools. Of greatest value is Chapter 4 which discusses problems of practical use of ultrasonic machining. N. S.

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Acc. Nr.: AP0046497

Ref. Code: UR0094

USSR

UDC 628.977.1:621.316.722

KUNGUS, YA. A., VOLOSATOV, YU. V., VLADENTSEV, V. N., Engineers, and TROSHIN, V. A., Candidate of Technical Sciences, Central Electrical Engineering Research Laboratory for Non-Ferrous Metallurgy

"Thyristor Voltage Regulator for Lighting Systems"

Moscow, Promyshlennaya Energetika (Industrial Power Engineering), No 1, 1970, pp 24-27

Translation: Questions associated with the damage caused by voltage step up in lighting systems are discussed, and a formula for determination of this damage is presented. The possibility of using simple and economical thyristor regulators to maintain voltage constancy in lighting lines is shown. Formulas are given for determining the power factor and efficiency of the regulator and also the changes of these values in regulation. The electric circuit of the thyristor regulator is described, and results of tests of experimental models are presented. (3 illustrations, 4 biblio. ref.)

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REEL/FRAME
19781750

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USSR

UDC: 681.333:551.482.215.4/5.001.57

VOLOSEVICH, A. N., Scientific Research Institute of Hydrometeorological Instrument Building

"An Analog Device for Computing Water Levels and Flow-Rates"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 34, 1970, Soviet Patent No 286359, Class 42, filed 21 Apr 67, p 137

Abstract: This Author's Certificate introduces: 1. An analog device for computing water levels and flow-rates in the case of unsteady flow in river beds and channels. The device contains a module for automatic input of initial data, a module for manual data input, a unit for selecting the recording scale of the machine variables, a module for readout of machine time units, registration devices, and a resolver which consists of RC elements with variable parameters, relay contact groups being used to connected the resistors to the capacitors. As a distinguishing feature of the patent, the device is designed for high precision in matching the areas of hydrographs computed for constant and variable parameters and for carrying out computations with variable parameters with input of the initial data from a communications channel when the input hydrograph is not known beforehand. The output of each loop in the resolver is connected to decoupling cells whose outputs are connected through voltage dividers to the bases of the transis-

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203530002-4"

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VOLOSEVICH, A. N., Soviet Patent No 286359

tors in the amplification stages, and connected in parallel with the emitter--collector circuit are the resistors of the voltage dividers. These resistors determine the voltage across the base of the transistorized keys which have the relay windings connected in their collector circuits. 2. A modification of this device with the distinguishing feature that the circuit is simplified by connecting the relay windings in parallel with the emitter--collector circuits of the transistorized amplification stages.

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VOLOSEVICH P.P.

pulsating character with an irregular oscillating frequency of 5-10 Hz. Average deepening rates in the pulsating period and in steady-state evaporation are tabulated for various materials. This qualitative characteristic was observed in all experiments, with quartz as well as with other optical materials. The only variation was in the pulsation amplitude and the steady-state regime discharge time. Two main processes, namely gaseous phase dispersion and emission shielding lead to the pulsating nature of cavity formation. The pulsation damping of LK-5, K-8 and other glass types occurred more rapidly than with quartz glass. A steady self-adjusting evaporation regime was observed through to the complete piercing of a 60 mm thick quartz specimen, and with splitting of other materials. The pulsating nature of the process up to the self-adjusting regime is apparently common to all substances. The damage products of these substances also exhibit absorptivity at the active irradiation frequency. The authors conclude by giving a system of approximate equations for the dynamic low-temperature evaporation of dielectrics, taking vapor absorption into account.

Volosevich, P. P., and Ye. I. Levanov. On self-similar motions of a two-temperature plasma. IN: Sbornik. Teplo- i massoperenos, v. 8, Minsk, 1972, 29-35. (RZhMekh, 9/72, no. 9B119) (Translation)

A self-similar solution is analyzed to the problem of dispersion of an ionized gas in vacuum, occurring from a laser-target interaction. The case is considered for a powerful laser source interacting with a plane solid surface. The plasma is treated as a two-

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UDC 536.33

VOLOSEVICH, P. P., LEVANOV, YE. I.

"Effect of Heat Conductivity on the Propagation of Laser Radiation Absorption Waves"

Moscow, Doklady Akademii Nauk SSSR, Vol 194, No 1, 1970, pp 49-52

Abstract: A laser beam incident on some material causes vaporization of the material, and the ionization of the resulting vapor by the beam and consequent absorption of the radiation by the ionized vapor may lead to high temperatures of a small portion of the gas. This zone absorbs practically all the radiation of the beam and the vaporization stops, giving rise to the absorption glow of the laser radiation. Then, the temperature and density values at which the effect of the electron heat conductivity becomes significant are reached. Starting with a system of five gas dynamics equations in the unidimensional plane approximation, the gas being considered ideal, the authors determine two modes of the absorption glow radiation. The electron heat conductivity is computed by the method described in an earlier paper (by N. N. Kalitkin, in Teplofiz. vysokikh 1/2

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VOLOSEVICH, P. P., et al, Doklady Akademii Nauk SSSR, Vol 194, No 1, 1970, pp 49-52

temperatur -- High Temperature Thermal Physics -- Vol 6, No 5, 1968, p 801). Analysis and the numerical computations for the situation in which the electron heat conductivity is identically zero showed that, depending on the power of the radiated beam, the initial temperature formation may be propagated in the medium during glow radiation or may remain fixed at a particular portion of the gas. The authors also investigate the thermal conducting structure of the absorption wave shock detonation without taking the heat radiation into account. They conclude by expressing their gratitude to A. A. Samarskiy, S. P. Kurdyumov, and Yu. P. Popov for their comments and to L. N. Busurina for making the computations.

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USSR

UDC 620.172.25

TRET'YACHENKO, G.N., VOLOSHCHENKO, A.P. (Kiev), Institute of Strength Problems, Academy of Sciences, ~~Ukrainian SSR~~

"Evaluation of the Influence of a Static Load Upon the Thermal Stability of Gas-Turbine Blades Operating Under Conditions of Thermal Cycling"

Kiev, Problemy Prochnosti, No 2, 1972, pp 86-90

Abstract: In this article there is set forth the procedure for qualitative evaluation of the influence of a static load upon the thermal stability of gas turbines that operate under pulse conditions. Experimental data are provided as well. 4 figures, 1 bibliographic entry.

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USSR

UDC 621.1

VOLOSHCHENKO, A. P., TRET'YACHENKO, G. N., MAKOVETSKIY, I. V.

"Concerning the Heat Resistance of Gas Turbine Blades in a Flow of Fuel Combustion Products"

Kiev, Problemy Prochnosti, No 6, June 1970, pp 3-9

Abstract: In the article are presented the results of research on change of the chemical composition, the microhardness, and the metal structure of the surface layer of models of the working vanes of gas turbines under conditions of the simultaneous action of thermal cycling (four cycles per minute), and static tension which simulates the action of centrifugal forces upon the working vanes under pulse conditions of turbine operation.

The alloyed steels tested were EI826, EI765 and EI827. The greatest change in chemical composition of the surface of the alloy occurred in the case of the EI827 (12 kg/mm^2; 24,970 cycles). All three were found to be structurally stable under the conditions of the test regime for 100 hours at 600°C with and without static tension. Photomicrographs show that in EI765 incipient changes involve a coagulation of particles in the intermetallic phase.

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USSR

UDC 620.1

TRET'YACHENKO, G. N., VOLOSHCHENKO, A. P., KONEV, V. A., KRAVCHUK, L. V., KURIYAT, R. I., (Kiev)

"Influence of Salts of Sea Water in a Gas Stream on Thermal Stability of Turbine Blades"

Kiev, Problemy Prochnosti, No 12, Dec. 1972, pp 40-43.

Abstract: Methodological problems are studied, related to the study of the influence of sea salt in a gas stream on the load-bearing ability of the nozzle blades of marine gas turbine engines with thermal cycling of loading. Certain quantitative data are produced on the influence of sea salts on the nature of development of thermal fatigue cracks. The stress-strain state of the blade and its changes during a thermal loading cycle are studied.

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1/2 025 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--REDUCTION OF MAGNESIUM, CALCIUM, STRONTIUM AND BARIUM WITH SILICON AND ALUMINUM FOR THE PRODUCTION OF COMPLEX MODIFIERS -U-

AUTHOR-(05)-GOLEV, A.K., ZAYKO, V.P., RYSS, M., VOLOSHCHENKO, M.V., KOMPANICHENKO, V.M.

COUNTRY OF INFO--USSR

SOURCE--V SB. TEZISY DOKL. VIII KONFERENTSII PO TEORII I PRAKT. PROIZ-VA

REFERENCE--RZH-TEKHNOLOGIYA MASHINOSTROYENIYA, NO 3, MAR 70, ABSTRACT E

DATE PUBLISHED--------70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES, MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--METAL REDUCTION, MAGNESIUM, CALCIUM, STRONTIUM, BARIUM, SILICON, ALUMINUM, SMELTING FURNACE, NODULAR IRON, CAST IRON, METALLURGIC CONFERENCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/1662 STEP NO--UR/0000/70/000/000/0000/0000

CIRC ACCESSION NO--AR0127136

UNCLASSIFIED

2/2 025 UNCLASSIFIED

CIRC ACCESSION NO--AR0127136 PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT IS NOTED THAT DURING REDUCTION OF MG FROM MG OXIDE BY 75PERCENT FERROSILICON WITH THE USE OF FLUX (FLUORITE), IT IS POSSIBLE TO OBTAINE 3-4PERCENT MG IN ALLOY. WITH REDUCTION IN THE PRESENCE OF CA OXIDE IT IS POSSIBLE TO OBTAIN UP TO 5-6PERCENT MG IN THE ALLOY. CA WAS REDUCED BY 75PERCENT FERROSILICON UP TO 22-24PERCENT OF ITS CONTENT IN ALLOY. USE OF CALCIUM IN INDUSTRIAL SMELTING IS AS HIGH AS 25-35PERCENT IN THE ABSENCE OF OTHER OXIDES IN CHARGE. COMBINED REDUCTION OF CA, AL AND SI ALLOWS TO BRING RECOVERY OF CA FROM OXIDES UP TO 40PERCENT AND ITS CONCENTRATION IN ALLOY UP TO 24-26PERCENT. REDUCTIONOF SR WAS MOST DIFFICULT OF THE ALKALINE EARTH METALS, ITS CONCENTRATION DURING COMPLEX SILICON CALCIUM ALUMINOTHERMIC PROCESS DID NOT EXCEED 15PERCENT. BARIUM WAS MOST EASILY REDUCED. DURING REDUCTION OF BA BY 75PERCENT FERROSILICON, ITS CONCENTRATION REACHED 35PERCENT ANC ITS SHIFT TO ALLOY 45PERCENT. DURING COMPLEX CALCIUM SILICON ALUMINOTHERMIC PROCESS THE AMOUNTS WERE 45 AND 80PERCENT RESPECTIVELY.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--THEORETICAL BASIS FOR USING COMPLEX INOCULATING AGENTS FOR INCREASING THE PHYSICOMECHANICAL PROPERTIES OF CAST IRON -U-

AUTHOR--VOLOSHCHENKO, M.V.

COUNTRY OF INFO--USSR

SOURCE--VISN. AKAD. NAUK UKR. RSR 1970, (1), 60-72

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CAST IRON, MECHANICAL PROPERTY, BIBLIOGRAPHY, CALCIUM CONTAINING ALLOY, SILICON CONTAINING ALLOY, MAGNESIUM CONTAINING ALLOY, INOCULATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1196/1981 STEP NO--UR/0655/70/000/001/0060/0072

CIRC ACCESSION NO--AP0118940

UNCLASSIFIED

2/2 012 UNCLASSIFIED

CIRC ACCESSION NO--AP0118940 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS ARTICLE REVIEWS THE USE OF COMPLEX INOCULATING AGENTS SUCH AS ALLOYS OF CA, SI, AND MG. 19 REFS.

UNCLASSIFIED

USSR

UDC 621.374.33

VOLOSHCHENKO, YU. I.

"Switch Based on a Thin Ferromagnetic Film"

Elektron. tekhnika. Nauch.-tekhn. sb. Radiokomponenty (Electronic Engineering. Scientific and Technical Collection. Radio Components), 1970, vyp. 7, pp 36-44 (from RZh-Radiotekhnika, No 10, Oct 71, Abstract No 10G219)

Translation: The structural design and operating principle of a switch based on a thin ferromagnetic film are described. The switch is designed for controlling the power of high frequency oscillations. The vertical relations are presented which permit determination of the switch parameters in the open and closed states, and the results of an experimental study of the switch are given. The bibliography has 5 entries.

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USSR

UDC 621.372.837

PUZYREV, V. A., VOLOSHCHENKO, YU. I.

"Thin Ferromagnetic Film Microwave Switch"

Tr. Mosk. aviats. in-ta (Works of Moscow Aviation Institute), 1970, vyp. 215, pp 206-217 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4B174)

Translation: Results are presented from theoretical and experimental investigation of a thin ferromagnetic film microwave commutator. There are 7 illustrations and a 3-entry bibliography.

1/1

USSR

UDC 621.039.543.4:621.039.544.57

VOLOSHCHUK, A. I., GAYDAMACHENKO, G. S., GOLOVCHENKO, YU. M., ZELENSKIY, V. F., IVANOV, V. YE., and KONOTOP, YU. F.

"Uranium Hardened With Beryllium Oxide Particles"

Moscow, Atomnaya Energiya, Vol 29, No 3, Sep 70, pp 178-183

Abstract: The article describes results of a study of uranium hardened with beryllium oxide particles. Compositions were prepared by mixing uranium hydride and beryllium oxide powders. Several types of beryllium oxide powder were used, viz. ordinary commercial BeO and BeO obtained from beryllium acetate by the Funston method. The results indicate that the strengthening of uranium with dispersed beryllium oxide particles significantly increases its heat resistance. The creep rate declines with a drop in the annealing temperature of beryllium oxide during its preparation. The creep rate is highly sensitive to load. At 600° C the creep rate of precipitation-hardened uranium is the same as or below that of unalloyed uranium at 500° C and under the same stresses. The creep activation energies calculated

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USSR

VOLOSHCHUK, [illegible] I., et al., Atomnaya Energiya, Vol 29, No 3, Sep 70, pp 178-183

from the slope of the curves $\ln \dot{\varepsilon} = f(\frac{1}{T})$ for the most heat-resistant compositions are considerably less than the self-diffusion activation energy and the creep activation energy of unalloyed commercial uranium. High-temperature softening in precipitation-hardened uranium is delayed 50-100° C as compared to unalloyed commercial uranium. Preliminary radiation test results indicate the high radiation resistance of precipitation-hardened uranium.

2/2

1/3 016 UNCLASSIFIED

TITLE--EFFECT OF TRIFLUOROMETHYLSELENO GROUPS ON THE COLOR OF AMINOAZO AND CYANINE DYES -U-

PROCESSING DATE--23OCT70

AUTHOR-(02)-YAGUPOLSKIY, L.M., VOLOSHCHUK, V.G.

COUNTRY OF INFO--USSR

SOURCE--UKR. KHIM. ZH. 1970, 36(1), 66-71

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--FLUORINATED ORGANIC COMPOUND, DYE, AZO COMPOUND, ORGANOSELENIUM COMPOUND, THIAZOLE, MOLECULAR STRUCTURE, HETEROCYCLIC BASE COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1807

STEP NO--UR/0073/70/036/001/0066/0071

CIRC ACCESSION NO--AP0123602

UNCLASSIFIED

2/3 016 UNCLASSIFIED

CIRC ACCESSION NO--AP0123602 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MICROFICHE OF ABSTRACT CONTAINS GRAPHIC INFORMATION. THE PREVIOUSLY ESTABLISHED RELATION FOR THE CHANGE IN LAMBDA FOR RHO,XC SUB6 H SUB4 N:NC SUB6 H SUB4 NME SUB2 (I) BETWEEN ETOH AND 2:1 ETOH,HCL OR ETOH,H SUB2 SO SUB4 MIXTS. AND MAX. SIGMA SUBP, 0.01 DELTALAMBDA EQUALS 1.25 MINUS 1.01 SIGMA SUBP (YA., ET AL., 1965) GIVES THE FOLLOWING VALUES OF SIGMA SUBP WHICH ARE IN GOOD AGREEMENT WITH THOSE OBTAINED USING THE PK SUBA OF BENZOIC ACIDS: H, 0.00; F SUB3 CO, 0.32; F SUB3 CS, 0.43; F SUB3 CSE, 0.38; F SUB3 CSO, 0.67; F SUB3 CSEO, 0.63. I (X EQUALS F SUB3 CSE) M. 164-5DEGREES (C SUB6 H SUB6), LAMBDA SUBMAX 447 NM (ETOH), 505 NM (2:1 ETOH,HCL). I (X EQUALS F SUB3 CSEO) M. 194-5DEGREES (C SUB6 H SUB6), LAMBDA SUBMAX 448 NM (ETOH), 510 NM (2:1 ETOH,H SUB2 SO SUB4). ATTEMPTS TO COMPLETE THE SERIES WITH THE F SUB3 CSO SUB2 COMPD. WERE UNSUCCESSFUL. RHO,RO SUB2 CNHC SUB6 H SUB4 SEO SUB2 CF SUB3 (II, R EQUALS ET), M. 154-5DEGREES (ETOH), AND II (R EQUALS PHCH SUB2), M. 152-3DEGREES, PREPD. BY OXION. OF RHO,RO SUB2 CNHC SUB6 H SUB4 SECF SUB3, M. 91-2DEGREES (C SUB6 H SUB6) AND 110-11DEGREES (C SUB6 H SUB6), RESP., BOTH LOST THE CF SUB3 SEO SUB2 GROUP ON HYDROLYSIS, BOTH IN ACID AND IN BASIC SOLN. BECAUSE OF THE POWERFUL OXIDATIVE ACTION OF THE CF SUB3 SEO SUB2 GROUPS, PHSEO SUB2 CF SUB3 (III) REACTED WITH BOTH HCL AND PCL SUB5 TO FORM PHSECL SUB2 CF SUB3, M. 66DEGREES (LIGROINE). IN 10PERCENT NA SUB2 CO SUB3 AT ROOM TEMP. III FORMED PHSEO SUB3 H, ISOLATED AS THE RHO,MEC SUB6 H SUB4 NH SUB2 SALT, M. 173DEGREES.

UNCLASSIFIED

3/3 016 UNCLASSIFIED

CIRC ACCESSION NO--AP0123602 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--STARTING FROM RHO,ACNHC SUB6 H SUB4 SECF SUB3, RHO,MECSNHC SUB6 H SUB4 SECF SUB3, M. 111-12DEGREES (LIGROINE), 2,METHYL,6,(TRIFLUOROMETHYLSELENO)BENZOTHIAZOLE, M. 73-5DEGREES (C SUB6 H SUB6,LIGROINE) (ETI SALT M. 175-6DEGREES), WERE PREPD. BY STANDARD METHODS. F SUB3 CSECL AND OMICRON,ACNHC SUB6 H SUB4 NH SUB2 IN ET SUB2 O GAVE 5,2,F SUB3 CSE(H SUB2 N)C SUB6 H SUB3 NHAC, M. 191DEGREES (AQ. ETOH). FROM THESE COMPDS. THE SE CONTG. DYES IV-IX (R EQUALS F SUB3 CSE) WERE PREPD. BY STANDARD METHODS. THERE IS NO GREAT DIFFERENCE BETWEEN THE EFFECT ON THE ABSORPTION OF CYANINE DYES PRODUCED BY THE F SUB3 CS AND BY THE F SUB3 CSE GROUPS. PROPERTIES OF THE SE CONTG. DYES WERE COMPARED WITH THOSE OF THEIR ANALOGS (TYPE, LAMBDA SUBMAX (NM) FOR R EQUALS H, F SUB3 CO, F SUB3 CS, AND F SUB3 CSE, AND M.P. FOR R EQUALS F SUB3 CSE COMPD. GIVEN): IV, 558, 560, 568, 570, 274-6DEGREES; V, 544, 545, 555, 555, 174-6DEGREES; VI, 523, MINUS, 518, 522, 294-6DEGREES; VII, 530, 540, 549, 549, 260-2DEGREES; VIII, 498, 502, 510, 510, 208-10DEGREES; IX, 515, 518, 520, 520, 211-12DEGREES. ATTEMPTS TO NITRATE F SUB3 CSEPH PRODUCED M,O SUB2 NC SUB6 H SUB4 SEOCF SUB3, M. 141DEGREES; HYDROLYSIS GAVE M,O SUB2 NC SUB6 H SUB4 SEO SUB2 H, M. 155-6DEGREES (H SUB2 O).

FACILITY: INST. ORG. KHIM., KIEV, USSR.

UNCLASSIFIED

1/2 008 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--APPROXIMATE SOLUTION TO THE FOKKER PLANCK EQUATION FOR AEROSOL PARTICLES -U-

AUTHOR--VOLOSHCHUK, V.M.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHANIKA ZHIDKOSTI I GAZA, MAR.-APR. 1970, P. 155-162

DATE PUBLISHED----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ALGEBRAIC EQUATION, AEROSOL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0164 STEP NO--UR/0421/70/000/000/0155/0162

CIRC ACCESSION NO--AP0123935

UNCLASSIFIED

2/2 008 UNCLASSIFIED

CIRC ACCESSION NO--AP0123935 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF CONVECTIVE DIFFUSION OF AEROSOL PARTICLES FROM A GAS MEDIUM INTO AN OBSTACLE, AS A CHARACTERISTIC EXAMPLE FOR THE POSSIBILITY OF A SUBSTANTIAL EFFECT OF PARTICLE INERTIA ON THE BROWNIAN MOVEMENT OF THE PARTICLES. IT IS SHOWN THAT THE FOKKER PLANCH EQUATION OF THE DISTRIBUTION FUNCTION OF AEROSOL PARTICLES PROVIDES A SATISFACTORY DESCRIPTION OF SUCH A MOTION. AN APPROXIMATE METHOD OF SOLVING THE FOKKER PLANCK EQUATION IS PROPOSED, IN WHICH THE SOLUTION IS OBTAINED IN THE FORM OF A POWER SERIES IN SPACE VARIABLES.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--DEPOSITION OF AEROSOL PARTICLES ON A DROP AT SMALL STOKES NUMBERS -U-

AUTHOR-(02)-VOLOSHCHUK, V.M., MUYDINOVA, T.A.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, FIZIKA ATMOSFERY I OKEANA, VOL 6 6 JAN 1970, P 45-51

DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--AEROSOL, LIQUID DROP MODEL, REYNOLDS NUMBER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1910 STEP NO--UR/0362/70/006/000/0045/0051

CIRC ACCESSION NO--AP0108240

UNCLASSIFIED

2/2 016 UNCLASSIFIED

CIRC ACCESSION NO--AP0108240 PROCESSING DATE--02OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL STUDY OF THE DEPOSITON OF AEROSOL PARTICLES ON A DROP AT SMALL STOKES NUMBERS AND EXAMINATION OF THE INFLUENCE OF DROP DEFORMATION ON THE ATTACHMENT PROCESS. THE ZONE OF DEPOSITION ON THE SPHERE AND THE FLUX (CAUSED BY THE ATTACHEMENT) OF AEROSOL PARTICLES ONTO THE SPHERE ARE STJDIED AS FUNCITONS OF THE FLOW REYNOLDS NUMBER AND OF THE STOKES NUMBER AT REYNOLDS NUMBERS BELOW 20 AND STOKES NUMBERS BELOW A CRITICAL VALUE. VALUES OF THE COLLISION COEFFICIENT AND OF THE DEPOSITION ZONE ARE TABULATED FOR SIX SPECIFIC EXAMPLES INVOLVING DIFFERENT FLOW PARAMETERS AND DROP CONFIGURATIONS.

UNCLASSIFIED

1/2 007 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--FORMATION OF A CHARGE TRANSFER COMPLEX DURING THE REACTION OF 1,BENZYL,3,CARBAMOYLPYRIDINIUM CHLORIDE WITH THIOCYANATE ION -U-

AUTHOR-(03)-UZIYENKO, A.B., VOLOSHCHUK, V.YE., YASNIKOV, A.A.

COUNTRY OF INFO--USSR

SOURCE--UKR. KHIM. ZH. 1970, 36(4), 367-8

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THIOCYANATE, BENZENE DERIVATIVE, PYRIDINE, CHLORIDE, COMPLEX COMPOUND

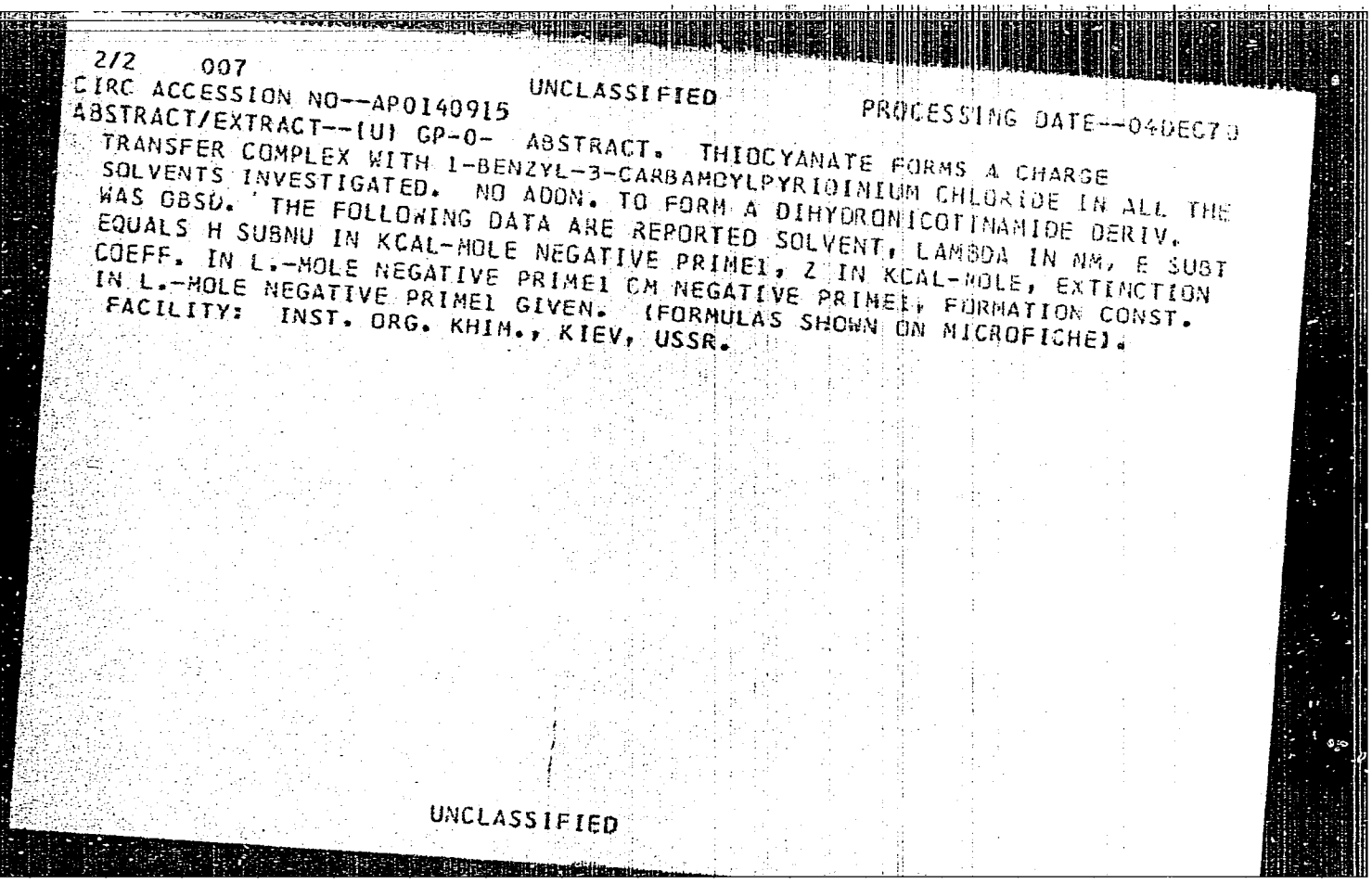
CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605019/C02 STEP NO--UR/0073/70/036/004/0367/0368

CIRC ACCESSION NO--AP0140915

UNCLASSIFIED



2/2 007 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140915

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIOCYANATE FORMS A CHARGE TRANSFER COMPLEX WITH 1-BENZYL-3-CARBAMOYLPYRIDINIUM CHLORIDE IN ALL THE SOLVENTS INVESTIGATED. NO ADDN. TO FORM A DIHYDRONICOTINAMIDE DERIV. WAS OBSD. THE FOLLOWING DATA ARE REPORTED SOLVENT, LAMBDA IN NM, E SUBT EQUALS H SUBNU IN KCAL-MOLE NEGATIVE PRIME1, Z IN KCAL-MOLE, EXTINCTION COEFF. IN L.-MOLE NEGATIVE PRIME1 CM NEGATIVE PRIME1, FORMATION CONST. IN L.-MOLE NEGATIVE PRIME1 GIVEN. (FORMULAS SHOWN ON MICROFICHE).

FACILITY: INST. ORG. KHIM., KIEV, USSR.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--CEMENTING WELLS OF THE WEST SOSNOVKA AREA -U-

AUTHOR-(04)-VEREZHNOY, A.I., NAZARENKO, V.L., MOSKOVKIN, I.V., VOLOSHIN, A.A.

COUNTRY OF INFO--USSR

SOURCE--GAZOV. PROM. 1970, 15(2), 9

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--PHENOL FORMALDEHYDE RESIN, CEMENT, HARDNESS, WELL DRILLING MACHINERY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/2042 STEP NO--UR/0492/70/015/002/0009/0009

CIRC ACCESSION NO--AP0122271

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0122271

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADDN. OF 2 WT.PERCENT OF AN AQ. PHENOL FORMALDEHYDE RESIN SLOWED THE HARDENING, INCREASED THE STRENGTH, AND REDUCED THE GAS PERMEATION OF THE CEMENT.

UNCLASSIFIED

USSR

UDC 621.357.7:669.245'295

SOFRONKOV, A. N., VOLOSHIN, A. G., PRESNOV, V. A., and PERVIY, E. N.

"Structure of Ni-Ti Alloys Prepared Electrochemically"

Izv. vyssh. ucheb. zavedeniy. Khimiya i khim. tekhnol. (Studies of the Higher Institute of Learning. Chemistry and Chemical Technology), 15, No 10, 1972, pp 1567-1569 (from Referativnyy Zhurnal -- Khimiya, No 7, 1973, Abstract No 7L387 by L. S. Kanevskiy)

Translation: The conditions were studied for the simultaneous electrodeposition of Ni and Ti and the phase compositions of the compound obtained. The alloy is precipitated from a boron hydrogen fluoride and a sulfate electrolyte at a D_k of 1-20 a/dm^2. Photoelectrocolorimeter and X-ray studies showed that the concentration of Ti in the alloy fluctuated from 1-10% as a function of the D_k and the composition of the electrolyte; an increase in D_k increased the Ti concentration. The Ni-Ti alloys represent solid solutions of Ti substituting for Ni. Calculation of the crystal lattice constant a_{Ni-Li} [sic. maybe should read a_{Ni-Ti}] derived from the quadratic formula, gave a value of a_{Ni-Ti} of 3.56 and 3.54 Å for alloys obtained from the boron-hydrogen fluoride and from the sulfate electrolyte respectively.

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USSR

UDC 541.11

SOFRONKOV, A. N., VOLOSHIN, A. G., PRESNOV, V. A., and PERVIY, E. N.,
Odessa State University imeni I. I. Mechnikova

"Structure of the Ni-Ti Alloy Prepared Electrochemically"

Ivanovo, Khimiya i Khimicheskaya Tekhnologiya, Vol 15, No 10, 1972, pp 1567-1569

Abstract: When the simultaneous electrodeposition of titanium and nickel is carried out, the rate of discharge of nickel ions is somewhat lower and that of titanium somewhat higher than for the deposition of each metal individually. The phase composition of such simultaneously deposited alloys was studied. The concentration of Ti, analyzed by colorimetric and X-ray techniques, ranged from 1-10% and varied with the particular acid used in the electrolyte solution and with the surface current.

USSR

VOLOSHIN, G. Ya.

"One Statistical Approach to the Study of Pattern Recognition"

VI Vses. Seminar "Avtomat. Raspoznavaniye Slukhovykh Obrazov (ARSO VI) Dokl. i Soobshch. [Sixth All-Union Seminar on "Automatic Recognition of Auditory Patterns (ARSO VI), Reports -- Collection of Works], Tallin, 1972, pp 49-54 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V849).

Translation: Criteria are introduced for optimal complexity of one class of decision rules. Patterns are described in a character space by means of the weighted sum of normal rules with diagonal covariation matrices.

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USSR

UDC: 621.374.33(088.8)

VOLOSHIN, L. A., POLUNINA, T. M.

"An Electronic Key"

USSR Author's Certificate No 273277, filed 13 Jan 69, published 28 Aug 70 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2G294 P)

Translation: A switch is proposed which consists of an amplification stage, a transformer and a controlling balanced input circuit. To reduce commutation noise level and simplify conditions for balancing the control pulse, one of the transformer windings is connected in the emitter circuit of the amplification stage, and the collectors of the controlling transistors are connected to the other winding without feeding the supply voltage to these collectors. The emitters of the controlling transistors are interconnected and grounded, and the bases are interconnected through a potentiometer to which the controlling pulses are sent.

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USSR

UDC 547.569.2.341.26'118.07

VOLOSHIN, M. P., VIZGERT, R. V., SKRYPNIK, YU. G., L'vov, "Order of Lenin" Polytechnical Institute

"A Method of Making O,O-Dialkyl Phosphonomethylene Aryl Sulfides"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 22, Aug 72, Author's Certificate No 345166, Div C, filed 18 Sep 70, published 14 Jul 72, p 97

Translation: This Author's Certificate introduces a method of making O,O-dialkylphosphonomethylene aryl sulfides. As a distinguishing feature of the patent, the process is simplified by reacting a O,O-dialkylphosphonomethylene diaryl sulfonate with thiophenol in an inert organic solvent such as acetone in the presence of potassium carbonate with subsequent isolation of the goal product by conventional methods.

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USSR

UDC 547.541.6+547.26'118.07

VIZGERT, R. V., and VOLOSHIN, M. P., L'vov Polytechnic Institute

"Aromatic Sulfonate Esters. Synthesis and Properties of Dialkylphosphonomethyl Aranesulfonates"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 1991-1994

Abstract: In furthering the study on the effect of the nacure of alcohol alkyl on the reactivity of aromatic sulfonates in nucleophilic substitution, a synthesis was made of dialkylphosphonomethyl aranesulfonates of the general formula $(RO)_2P(O)CH_2OSO_2ArX$ from various aromatic sulfonyl chlorides and dialkyl α-hydroxymethyl phosphonates or their sodium derivatives. Two methods of synthesis are described. The reaction follow the scheme

$$ClSO_2ArX \longrightarrow \begin{cases} \xrightarrow{+(RO)_2P(O)CH_2OH} \\ \xrightarrow[-(RO)_2P(O)CH_2ONa]{} \end{cases} (RO)_2P(O)CH_2OSO_2ArX$$

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USSR

VIZGERT, R. V., et al., Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 1991-1994

Ether or benzene were used as inert solvents, finely ground KOH served as the HCl acceptor and the reaction mixture temperature was maintained at 0-10°C. The eleven compounds obtained are transparent, viscous liquids or crystalline substances soluble in alcohol, ether, acetone and benzene but insoluble in water and petroleum ether. Tables in the original article cite analytical data, yields, formulas, and NMR spectral results. It is suggested that dialkylphosphonomethyl aranesulfonates can phosphonomethylate.

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Acc. Nr: AP0044108

PRIMARY SOURCE: Neyrofiziologiya, 1970, Vol 2, Nr 1, PP 73-78

Ref. Code: UR 0660

ELECTROPHYSIOLOGICAL STUDIES OF CONNECTIONS FROM ENTORHINAL AREA TO NEOCORTEX

M. Ya. Voloshin

The A. A. Bogomoletz Institute of Physiology, Academy of Sciences, Ukrainian SSR, Kiev

Summary

Experiments were performed in rabbits immobilized with d-tubocurarine.

Entorhinal cortex stimulation with rectangular pulses produced evoked potentials (EP) in occipital, temporal, parietal and cingular neocortical regions with latencies of .6—12 msec.

The positive component of these EP lasted 25—50 msec and their amplitude reached 500 μV. The negative component was irregular. The neocortical EP followed the frequency of entorhinal rhythmic stimulation up to 20 per second. Stimulation of the medial part of the entorhinal cortex with frequency 1—3 per second produced the recruitment of EP in occipital and temporal neocortical regions. Nembutal suppressed the amplitude of neocortical EP in response to entorhinal stimulation.

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19770583

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AP0044108

It was found that conditioning entorhinal stimulation produced during first 50 msec and then after 80—120 msec an enhancement of somatosensory response to contralateral ischiadic nerve stimulation. The negative component of primary response was suppressed.

It is suggested that limbic influences on neocortex may pass through entorhinal area.

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19770584

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USSR UDC 617-001.17-092.90-7:616.831-83 008.1.07

VEDYAYEV, F. P. and VOLOSHIN, P. V., Department of Normal Physiology (Chief, Prof. F. P. Vedyayev) and Department of Nervous Diseases (Chief, Prof. Ye. G. Dubenko), Khar'kov Medical Institute

"Characteristics of Functional Shifts in the Limbic-Reticular System During Action by a Thermal Stress Factor"

Moscow, Patologicheskaya Fiziologicheskaya i Eksperimental'naya Terapiya, No 4, Jul/Aug 73, pp 11-16

Abstract: In experiments on rabbits subjected to the action of thermal trauma (dosed burn with respect to area and with respect to depth of muscle heating), the following was investigated: bioelectrical activity of the cortical and subcortical structures of the brain, the state of cerebral hemodynamics (rheography), the condition of the cardiac and respiratory systems (EKG, pneumography), as well as thermotopography of the brain structures and the muscles, and polarography of various portions of the brain and of the muscles. Thermal action is shown to have produced a characteristic stress reaction accompanied by profound disturbances of the systems under study. A sequence was revealed in the development of functional shifts -- disturbances in the limbic-reticular system take place

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USSR

VEDYAYEV, F. P. and VOLOSHIN, P. V., Patologicheskaya Fiziologicheskaya i Eksperimental'naya Terapiya, No 4, Jul/Aug 73, pp 11-16

in the initial stages after the burn, with subsequent involvement of the cardiovascular and respiratory systems; later (according to thermographic and polarographic data), a change occurred in the level of the redox processes. 3 figures. 14 references.

VOLOSHIN, V. G.

JPRS-56030
18 May 72

UDC 616-001.12-031.22-07:616.12-073.97

CARDIAC ELECTRIC ACTIVITY ACCOMPANYING DIFFERENT DEGREES OF DECOMPRESSION OF THE LOWER HALF OF THE BODY

[Article by V. G. Voloshin and L. Ya. Pikina; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 6, No 2, March-April 1972, pp 38-43, submitted for publication 18 January 1972]

Abstract: A study was made of cardiac electric activity during applications of negative pressure of -40 and -80 mm Hg to the lower half of the body. The examinations revealed a significant increase in the heart rate, an increase in the R amplitude, and a decrease in the T amplitude, as well as displacement of the heart electric axis toward the vertical, related to the degree of decompression. During the first minutes of exposure changes in the R and T voltage and the electric position of the heart developed simultaneously but later occurred independently; the R variations were most distinct; T changes were least pronounced. Tissy changes seemed to be associated not only with an impeded venous return to the heart and its reduced blood filling, but also with a redistribution of the specific weight of components of the specific weight of components of the cardiac autonomic innervation, the sympathetic innervation being predominant. The collected data suggest that lower body negative pressure is an adequate model simulating the effect of longitudinal cardiac electric activity.

Decompression of the lower half of the body, causing changes in functioning of many body systems and especially the cardiovascular system, are regarded as a method for "stressing" of the latter (Brown, et al.; Murray, et al., and others), simulating the hemodynamic effects of longitudinal accelerations and an orthostatic test. Decompression can considerably decrease blood return to the heart and thereby changes intracardiac hemodynamics (Rutter, et al.).

USSR

UDC 617.54-02:617.55-001.12-092.9]-073.75

TYUTIN, L. A., VOLOSHIN, V. G., and KRASNYKH, I. G.

"X-ray Study of the Thoracic Organs During Decompression of the Lower Half of the Body"

Moscow, Vestnik Rentgenologii i Radiologii, No 2, 1971, pp 26-30

Abstract: Healthy male subjects 20- to 25-years old were subjected to negative pressures of 40 mm Hg for 20 min and 80 mm Hg for 10 to 20 min after a rest period while lying on their backs in a special container with elastic girdles around their waists. X-rays taken at the end of the diastole revealed the presence of shifts normally observed after accelerations in a head-pelvis direction: downward displacement of the diaphragm and higher position of the lungs, decrease in the main dimensions of the heart (especially the length), decrease in blood flow in the vessels in the upper portions of the lungs, and some reduction in the diameter of vessels in the lower portions, decrease in the diastolic volume and filling of the heart cavities with blood, increase in the angle of slope of the cardiac axis, and marked increase in blood flow to the heart after rapid normalization of the pressure.
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Physiology

USSR

SARATIKOV, A. S., VOLOSHINA, E. I., REVINA, T. A., and SAKHAROVA, S. A., Tomsk State Medical Institute, Tomsk

"Energy Metabolism of the Brain in Acute Hypoxic Hypoxia"

Novosibirsk, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR, Seriya Biologicheskikh Nauk, No 5, Apr 71, pp 119-126

Abstract: Hypoxia was produced in rats by placing individual animals into a chamber with a capacity of 1.5 liters in which CO_2 was absorbed by a 20% solution of NaOH. Severe hypoxia, as indicated by slowed respiration and spasmodic gasping for air, developed in approximately one hour. At that time the O_2 pressure in the chamber was 40-60 mm and the CO_2 content in it less than 0.2%. As a result of the hypoxia that developed, the content of ATP, ADP, AMP creatine phosphate, glucose, and glycogen in the brain tissue of the animals decreased. The decrease in the level of macroergic phosphates was due to an inadequate rosynthesis of the latter in consequence of a distributed conjugation between oxidation and phosporylation and also to an increased rate of decomposition because of activation of the mitochondrial ATP-ase. The disturbance of conjugation was established on the basis of a decrease of

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USSR

SARATIKOV, A. S., et al., Izvestiya Sibirskogo Otdeleniya Akademii Nauk USSR, Seriya Biologicheskikh Nauk, No 1, Apr 71, pp 119-126

the P/O index in experiments on mitochondria separated by centrifuging and a drop in the respiratory control of phosphorylation in the mitochondria. The relative increase in free oxidation was apparently associated with damage to the ultrastructure of mitochondria of the brain tissue. The fact that the mitochondrial ATP-ase was activated followed from an increase in the amount of inorganic phosphate that was formed on incubation with ATP. The intensification of anaerobic glycolysis in the brain in hypoxia evidently did not offset to a sufficient degree the depletion of energy resources in brain tissue.

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USSR

UDC 615.225.2.015.4:612.82.013.7

SARATIKOV, A. S., VOLOSHINA, E. I., and SAKHAROVA, S. A., Chair of Pharmacology and Central Scientific Research Laboratory, Tomsk Medical Institute

"Effect of Aminophylline on Metabolism in the Brain During Hypoxia"

Moscow, Zhurnal Nevropatologii i Psikhiatrii imeni S. S. Korsakov, Vol 70, No 7, 1970, pp 995-999

Abstract: In vivo and in vitro experiments on rats showed that aminophylline (diaphylline) (2 mg/100 g) acts directly on the respiratory cycle of the cell. In intact animals, aminophylline intensified tissue respiration in the brain without affecting the respiratory quotient. For in vivo experiments and at high concentrations (1:5,000 to 1:1,000), it decreased the intensity of tissue respiration substantially. In hypoxic animals, aminophylline increased tissue respiration in the brain and normalized the respiratory quotient. Addition of the preparation to a brain homogenate of hypoxic animals increased both the consumption of oxygen and the release of carbon dioxide. Biochemical analysis revealed that aminophylline increased succinic dehydrogenase and cytochrome activity while decreasing that of NADH. In hypoxic animals, it increased the activity of all three enzyme systems. In brain mitochondria, aminophylline impaired oxidative phosphorylation, caused the organelles to swell, and decreased the content of macroergic phosphates, partially as a result of the activation of mitochondrial adenosinetriphosphatase.
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1/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--NITROGEN CASE HARDENING OF, STEEL, GEARS FOR THE TRACTION MOTOR OF AN ELECTRIC LOCOMOTIVE VL10 -U-

AUTHOR-(02)-CHELIDZE, N.S., VOLOSHINA, A.V.

COUNTRY OF INFO--USSR

SOURCE--METALLOVED. TERM. OBRAB. METAL. 1970, (4), 75-7

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--LOW ALLOY STEEL, ALLOY DESIGNATION, METAL HEAT TREATMENT, TRANSMISSION GEAR, CASE HARDENING, NITRIDATION/(U)VL10 LOCOMOTIVE, (U)20KHN3A LOW ALLOY STEEL, (U)37KHN3A LOW ALLOY STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0923 STEP NO--UR/0129/70/000/004/0075/0077

CIRC ACCESSION NO--AP0133012

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0133012

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STEEL 20KHNZA WAS SELECTED FOR GEARS FOR THE TRACTION MOTOR OF AN ELEC. LOCOMOTIVE VL10. WITH THE PURPOSE OF INCREASING THE STRENGTH, ALL SURFACES OF THE GEARS WERE SUBJECTED TO MECH. TREATMENT, NITROCEMENTATION, AND SUBSEQUENT THERMAL TREATMENT (1ST QUENCHING, HIGH TEMPERING, 2ND QUENCHING, AND LOW TEMPERING). NITROCEMENTATION OF GEARS INCREASED THEIR STABILITY 2.5 TIMES AS COMPARED TO THE GEARS FABRICATED FROM STEEL 37KHNZA BY HARDENING SURFACE QUENCHING WITH ACETYLENE-O FLAME. THE AV. YEARLY SAVINGS IN THE ECONOMY BY IMPLEMENTATION OF THE NEW TECHNOL. AT THIS ONE PLANT ARE ESTD. FACILITY: TBILIS. ELEKTROVOZOSTROIT. ZAVOD IM. LENINA, TBILISI, USSR.

UNCLASSIFIED

USSR

UDC: 538.6:537.311.31:669.15'292 - 192:669.245:669.255

VOLOSHINSKAYA, N. M., FEDOROV, G. V.

"The Kerr and Hall Effects in Ferromagnetic Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 5, Nov 73, pp 946-956.

Abstract: Normal and anomalous Hall effects, as well as the Kerr effect, were measured in ferromagnetic alloys Fe-V, Co-Al and Ni-Al in the 0.4-18 μ spectral interval. It is shown that the overall course of dispersion of the nondiagonal component of the dielectric permeability tensor can be described in the wave length interval studied on the basis of the mechanism of absorption within bands. This approach agrees with optical data and the results of measurement of the coefficient of the anomalous Hall effect.

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UDC 621.791.793

VOLOSHKEVICH, G. Z., SUSHCHUK-SLYUSARENKO, I. I., LYCHKO, I. I., KHRUNDZHE, N. M., Institute of Electric Welding im. Ye. O. Paton AN UkrSSR

"Some Means for Improvement of Electroslag Welding"

Kiev, Avtomaticheskaya Svarka, No 12, 1972, pp 5-9

Abstract: Characteristics of the electroslag welding method are discussed. The prospects for future development of the electroslag welding method are noted. The method is particularly promising for welding of extremely thick metal structures, although the welding rate is generally rather low for thick structures (less than 1 m/hr). Areas for further research are suggested, including: investigation of the properties of the seam zone in steels welded by the method; creation of new types of steels not requiring high-temperature heat treatment after electroslag welding; search for technological means of improving the structure of the seam zone after welding and tempering; development of means for improvement of the mechanical properties of seam metal after welding and tempering by changing the chemical composition; creation of effective methods of local and surface high-temperature heat treatment; development of measures for conservation of the shape of products with general high-temperature heat treatment; improvement of impact testing methods; and

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VOLOSHKEVICH, G. Z., et al., Avtomaticheskaya Svarka, No 12, 1972, pp 5-9

determination of the necessary areas for the application of high-temperature heat treatment by classification of products as to composition, usage temperature, nature of loading, presence of stress concentrators, etc.

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USSR

UDC 533.916

VOLOSHKO, A. Yu., SOLODOVCHENKO, S. I., CHECHKIN, V. V.

"Heating a Moving Plasma With Fast, High-Amplitude 'Whistlers'"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 16, No 11, 1971, pp 1822-1828

Abstract: An investigation is made of the absorption of high-frequency energy by a moving plasma at the resonant frequency of the fast, high-amplitude magnetoacoustical waves known as "whistlers." A Doppler shift of the whistler resonance frequency is discovered; it is caused by the motion of the plasma. It is found also that a plasma with a density of about 10^{13}/cm or higher is heated to a temperature of about 100 ev, a temperature rise requiring a high expenditure of the energy stored in the high-frequency arrangement. With further motion of the heated plasma bunching along the fundamental magnetic field, there is a reduction in plasma temperature of less than 10% at distances

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VOLOSHKO, A. Yu. et al, Ukrainskiy Fizicheskiy Zhurnal, Vol 16, No 11, 1971, pp 1822-1828

of the order of 100 cm from the heated portion. This heated bunching does not go beyond the magnetic barrier, the height of which is three times the value of the fundamental magnetic field. The experimental method is described and the results of the measurements are given. The work was done in the Khar'kov Physico-Technical University.

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USSR UDC 615.849.114.015.3

FROLOVA, A. V., TIMOV, A. A., and VOLOSHKO, E. N., Moscow Scientific Research Rentoeno-Radiological Institute, Ministry of Health RSFSR

"Qualitative Composition of Radiation at Depth in an Irradiated Medium"

Moscow, Meditsinkaya Radiologiya, Vol 16, No 3, Mar 71, pp 75-77

Abstract: Since ionizing radiation is widely used in medicine and biology, it is of importance to determine its composition at some depth of the irradiated medium (tissue, for instance). To determine changes in the qualitative composition of a radiation beam with the depth of the irradiated medium, a phantom-dosimeter was developed by the authors, which allows one to determine simultaneously the dose field and the qualitative composition of the irradiation as a function of the thickness of the medium. The device contains two scintillation pickups, one of which consists of CsI, the other one consists of a scintillating plastic based on polystyrene containing PTP, POPOP and ZnS(Ag) additions. Each pickup was a cylinder 2 mm in diameter and 2 mm long. The relationship of the readings of each of the pickups to the qualitative composition of the irradiation differed. The sample cell was a rectangular plexiglas vessel 12 x 12 x 17 cm which could be filled with any liquid. A polyethylene film served as a window (55 mm diameter) for the

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FROLOVA, A. V., et al., Meditsinkaya Radiologiya, Vol 16, No 3, Mar 71, pp 75-77

incoming radiation beam. The instrument was used to measure the dose field along the axis of the irradiation beam and to measure the thickness of the medium at which the radiation beam had lost half its intensity. Water and myogenic tissue were used as tissue-like media for the measurement of long-wavelength radiation. The data reported in this paper can be used for calculations of absorbed x-ray doses, in cases when it is necessary to consider the dependence of the conversion coefficients from roentgen to rads on the effective energy of the radiation.

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USSR

UDC 517.946

VOLOSHYNA, M. S., L'vov Polytechnic Institute

"On the Solution of the Dirichlet Problem for a Class of Strongly Elliptic Systems of Differential Equations in the Case of a Multiply Connected Region"

Kiev, Dopovidi Akademii Nauk Ukrains'koi RSR, Seriya A -- Fizyka Tekhnichni ta Matematychni Nauky, No 1, Jan 72, pp 11-14

Abstract: The article considers the self-adjoint system of Euler equations

$$A\left(\frac{\partial}{\partial x}\right)u(x) = \sum_{k,l=1}^{n} A_{kl}\frac{\partial^2 u(x)}{\partial x_k \partial x_l} = 0, \qquad (1)$$

which corresponds to the fundamental variational problem for a positive definite functional

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VOLOSHYNA, M. S., Dopovidi Akademii Nauk Ukrains'koi RSR, Seriya A -- Fizyko-Tekhnichni ta Matematychni Nauky, No 1, Jan 72, pp 11-14

$$\int \ldots \int_{V}^{(n)} \ldots \int \sum_{k,l=1}^{n} \frac{\partial u'(x)}{\partial x_k} A_{kl} \frac{\partial u(x)}{\partial x_l} dx_1 \ldots dx_n \geqslant$$

$$\geqslant \gamma^2 \int \ldots \int_{V}^{(n)} \ldots \int \sum_{k,l=1}^{n} \frac{\partial u'(x)}{\partial x_k} \frac{\partial u(x)}{\partial x_l} dx_1 \ldots dx_n. \qquad (2)$$

Let D be a region which is bounded by simple, closed Lyapunov-type surfaces $S_0, S_1, \ldots, S_m$, which do not intersect one another, with S_0 containing all other surfaces within itself. The space is n-dimensional. The solution of the inner Dirichlet problem

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VOLOSHYNA, M. S., Dopovidi Akademii Nauk Ukrains'koi RSR, Seriya A -- Fizyko-Tekhnichni ta Matematychni Nauky, No 1, Jan 72, pp 11-14

$$A\left(\frac{\partial}{\partial x}\right)u(x)=0, \qquad (1)$$

$$\lim_{x\to y_0+0} u(x)=f(y_0)\ (x\in D,\ y_0\in S) \qquad (3)$$

is sought in the form of a combination of analogs of the double-layer and layer-of-charge potentials:

$$u(x)=\int_S \ldots (n-1)\ldots \int [G_0(x-y,\nu(y))+\varphi_0(x-y)]\,\mu(y)\,d_y S^*, \qquad (4)$$

(such a potential is said to be a mixed potential).

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VOLOSHYNA, M. S., Dopovidi Akademii Nauk Ukrains'koi RSR, Seriya A -- Fizyko-Tekhnichni ta Matematychni Nauky, No 1, Jan 72, pp 11-14

Solving problem (1)-(3) in the form of (4), the author comes to a system of regular integral equations which is solved by the first Fredholm theorem. This method for the solution of the Dirichlet problem for multiply connected regions was proposed by V. D. KUPRADZE for Laplace's equation.

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USSR UDC: 669.14.018.29:539.43:620.178.35

CHERKES, Z. A., KAMENSKIY, A. P., VOLOSKOV, N. V.

"Study of the Influence of Amplitude of Repeated Impact on the Strength of 40Kh Steel as a Function of Tempering Temperature"

Tekhnol. Mashinostroyeniya [Machine Building Technology -- Collection of Works], No 7, Tula, 1972, pp 69-73 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8I513, by V. Bochkareva).

Translation: Specimens of 40Kh steel were subjected to the following heat treatment: hardening (heating to 850 ± 15° in a Pb bath, cooling in oil); low temperature tempering (heating in a salt bath at 220 ± 10°, cooling in water) to produce "hard" specimens; high temperature tempering (heating in a saltpeter bath at 500 ± 10°, cooling in water) to produce "soft" specimens. It is shown that repeated high energy impacts greatly reduce the strength of the "soft" and "hard" specimens, while low energy impacts increase strength. It is established that the maximum number of impacts can be withstood by specimens of "soft" metal, which have hish plasticity and low hardness, followed by the steel as delivered rolled, then the "hard" specimens, and finally, the hardened specimens without tempering. 1 figure, 2 tables, 2 biblio. refs.

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USSR UDC [621.357.7:669.781]:669.14

FOMINYKH, I. P., VOLOSKOV, N. V., and LAUKHIN, V. I.

"The Effect of Boridation on Properties of the Steel 20G2"

Tula, Sb. Tekhnol. mashinostroyeniya (Collection of Works: Machinebuilding Technology), Vyp 11, 1971, pp 66-79 (from Referativnyy Zhurnal -- Khimiya, Svodnyy Tom, No 23(II), 1972, Abstract No 23L302 by A. D. Davydov)

Translation: The effect of electrolytic boridation on mechanical properties and wear resistance of steel 20G2 subjected to different heat treatment was studied. A comparison of the strength and plasticity of this steel showed that the ultimate strength of borided samples (in comparison with unborided or casehardened) was the highest, 157.5 kg/cm^2 in the presence of sufficient plasticity which amounted to 8% elongation and 4 kg/cm^2 of impact toughness after hardening and tempering. Plasticity of the borated steel which was not subjected to heat treatment was high but its strength was low (62.8 kg/cm^2). Hardening conducted at the boriding temperature eliminated the effect of grain growth and increased the ultimate strength of 103 kg/cm^2 in the presence of a satisfactory plasticity. The microhardness of the surface layer of borided items remained unchanged at 1200 Hv, regardless of the types of heat treatment. Experimental data indicated that the resistance to wear of borided layer was higher compared with the casehardened or simply hardened layer after either low or high annealing.

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Acc. Nr: AP0048042 Abstracting Service: INTERNAT. AEROSPACE ABST. Ref. Code: 5-70 UR0051

A70-24262 # High-efficiency second-harmonic conversion of neodymium glass laser emission (Vysokoeffektivnoe preobrazovanie vo vtoruiu garmoniku izlucheniia lazera na neodimovom stekle). V. D. Volosov and M. I. Rashchektaeva. *Optika i Spektroskopiia*, vol. 28, Jan. 1970, p. 105-111. 15 refs. In Russian.

Experimental study of the effect of the spatial structure of the fundamental frequency of a neodymium glass laser on the efficiency of second harmonic generation in a KDP crystal. An optimal optical system for shaping the laser beam is found. It consists of three cylindrical lenses and makes it possible to achieve simultaneously both a reduction in the beam divergence in the principal plane of the crystal and an increase in the radiation density on the crystal. With the aid of this system it is possible to raise the efficiency of second harmonic generation to 65% with an initial laser emission density of about 30 MW/sq cm. On the basis of detailed studies of the angular and temporal characteristics of the harmonic, carried out at various conversion efficiency levels, it is found that even at an efficiency of the order of one per cent a method of calculation based on an approximation of a given field is not applicable to an analysis of such harmonic characteristics as the angular distribution and the emission pulse shape.

A.B.K.

REEL/FRAME 19791724

USSR UDC: 771.351.3

VOLOSOV, D. S., SHPYAKIN, M. G., TARABUKIN, V. V., GRIGOR'YEVA, N. M.

"A Fast Photo Lens"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 6, Feb 72, Author's Certificate No 328408, Division G, filed 4 May 70, published 2 Feb 72, p 142

Translation: This Author's Certificate introduces: 1. A fast photo lens which contains four components, the first made up of two separate negative menisci with concavity facing the diaphragm, and the second made up of a double-cemented element and a separate element. As a distinguishing feature of the patent, correction of aberrations is improved with simultaneous reduction of the overall longitudinal size by equipping the first component with an additional negative meniscus with concavity facing the diaphragm, and by making the separate element of the second component in the form of a negative meniscus with concavity turned toward the diaphragm, and making the third component from cemented positive and negative menisci and a biconvex lens with a power that is 15 and 1.6 times that of the positive and negative meniscus respectively. The fourth component is cemented up from a positive and a negative meniscus with powers of the same order and a difference in the coefficients of refraction of at least 0.19 and

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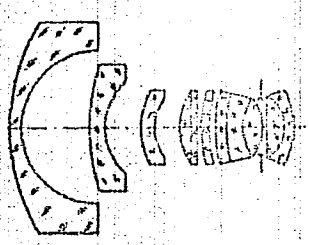
VOLOSOV, D. S. et al., USSR Author's Certificate No 328408

a dispersion coefficient ratio of at least 2.2. 2. A modification of this lens distinguished by the fact that a field of view of at least 90° is achieved in a liquid by making the separate and double-cemented elements of the second component as a single unit.



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USSR

UDC 621.378.325

ANDREYEV, R.B., VOLOSOV, V.D., KALINTSEV, A.G.

"Some Peculiarities Of The Generation Of Second Harmonics In A Lithium Methaniobate Crystal"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 6(12),1972, pp 44-49

Abstract: The paper investigates the temperature dependences of the synchronism angle, the synchronism angular width, the dispersion of the synchronism direction, and the temperature derivative of the synchronism direction during second harmonic generation in a $LiNbO_3$ crystal. The optical scheme is shown of an experimental unit for investigation of these parameters. The values are theoretically calculated of the parameters $K\alpha$ and $B\alpha$ which are the first and second members, respectively, in the phase tuning expansion with respect to the angle of deflection from the synchronism direction. An evaluation is made of the applicability of a linear approximation at various values of the synchronism angle. A 10-time increase was discovered of the dispersion of the synchronism direction, and a 20-time increase of the temperature derivative of the synchronism direction at an approximation to 90° synchronism. Nd-laser generation of second harmonics with an efficiency of $\sim$ 40 percent was obtained. In the

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ANDREYEV, R.B., et al, Kvantovaye elektronika, Moscow, No 6(12),1972,pp 44-49

process, induction inhomogeneity of the refraction index of the crystal was not observed. Curves are shown of the following: 1) Calculated dependences of the parameters $K\alpha$, $B\alpha$, and the wavelength of the exciting radiation on the values of the synchronism angle in a $LiNbO_3$ crystal with its temperature 25° C; 2) Experimental dependence of the angular synchronism width; 3) Experimental dependence of the parameter $K\alpha$ on the synchronism angle; and 4) Dependence of the efficiency of second harmonic generation of radiation in $LiNbO_3$ on the density of the radiated power at the crystal. The authors deeply thank M.P. Vanyukov for attention and interest in the work. 6 ill. 7 ref. Received by editors, 28 Dec 1970; after revision, 12 Oct 1971.

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USSR

UDC: 621.378.345.4

VOLOSOV, V. D., DUKHOVNYY, A. M., KRYLOV, V. N., SOKOLOVA, T. V.

"On Converting Radiation From a Laser in the Free Emission Mode to the Second Harmonic"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 2(8), 1972, pp 101-102

Abstract: An investigation was made into the energy dependence of the coefficient of conversion of radiation from a neodymium laser operating in the free emission mode to the second harmonic. When beam divergence is 20" and energy density is 75 J/cm^2, a coefficient of conversion of 0.105% is obtained. The destruction threshold for a KDP crystal was 1100 J/cm^2. Three illustrations, bibliography of two titles.

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USSR UDC 621.378.345.4

ANDREYEV, R. B., and VOLOSOV, V. D.

"Some Peculiarities of Two-Particle Laser Second-Harmonic Generation"

Minsk, Zhurnal Prikladnoy Spektroskopii, Vol 16, No 2, Feb 72, pp 363-364

Abstract: The article describes results of an analysis and experimental study of the angular spectrum of the second harmonic as different types of interactions ($oo \rightarrow e$ and $oe \rightarrow e$) are effected in a nonlinear KDP crystal for a two-particle laser. It is shown that the angular spectrum of the converted radiation differs significantly for these interactions, although the frequency spectrum of this radiation is the same in both cases.

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USSR

UDC 621.375.82

VOLOSOV, V. D., DUKHOVNYY, A. M., KRYLOV, V. N., and SOKOLOVA, T. V.

"On the Transformation of Laser Radiation in a Free Oscillation Mode to the Second Harmonic"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No 2, Moscow, "Sov. radio," 1972, pp 101-102 (from RZh-Fizika, No 10, Oct 72, Abstract No 10D871)

Translation: The energy dependence of the transformation coefficient of the radiation of a Nd laser operating in a free oscillation mode was investigated. A transformation coefficient of 0.105% was obtained for a divergence of 20" and an energy density of 75 joule/cm^2. An energy density of 1100 joule/cm^2 was the breakdown threshold of the KDP crystal. Authors abstract.

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1/2 022 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--ON FLIGHT OSCILLATIONS OF ELECTRONS IN A MAGNETIC TRAP -U-

AUTHOR-(03)-VOLOSOV, V.I., PALCHIKOV, V.YE., TSELNIK, F.A.

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, ZHURNAL TEKHNICHESKOY FIZIKI, VOL 40, NO. 1, JAN 70, PP 134-137

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MAGNETIC TRAP, PLASMA ELECTRON OSCILLATION, PLASMA INSTABILITY, MAGNETIC MIRROR, PLASMA DECAY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1411 STEP NO--UR/0057/70/040/001/0134/0137

CIRC ACCESSION NO--AP0125050

UNCLASSIFIED

2/2 C22 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125050

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ACCUMULATION AND CONFINEMENT OF FAST ELECTRONS UP TO 100 KEV IN A MAGNETIC TRAP WERE STUDIED. OSCILLATIONS ASSOCIATED WITH THE OSCILLATING MOTION OF ELECTRONS BETWEEN MAGNETIC MIRRORS WHICH LIMIT THE DENSITY OF THE HOT PLASMA WERE THE BASIC TYPE OF INSTABILITY OBSERVED IN THE EXPERIMENT. SEVERAL FEATURES OF THESE OSCILLATIONS ARE DESCRIBED AND A QUALITATIVE EXPLANATION OF THE RESULTS IS PROPOSED. THE EXPERIMENTS WERE CONDUCTED IN A MAGNETIC TRAP OF DIAMETER 40 CM AND LENGTH 130 CM (THE DISTANCE BETWEEN MIRRORS). THE MAGNETIC FIELD WAS STATIONARY AND VARIED FROM 100 TO 300 OE AT THE CENTER. IN PRACTICALLY ALL EXPERIMENTS OSCILLATIONS WERE OBSERVED WITH A FREQUENCY 20-30 MHZ, WHICH IS CLOSE TO THE OSCILLATION FREQUENCY OF FAST ELECTRONS BETWEEN THE MAGNETIC MIRRORS. THE OSCILLATION FREQUENCY WAS INDEPENDENT OF THE MAGNETIC FIELD, THE DENSITY OF THE TRAPPED FAST ELECTRONS, AND THE DENSITY OF THE COLD PLASMA AND NEUTRAL GAS. THE OSCILLATIONS WERE OBSERVED BOTH DURING THE INJECTION PULSE AND DURING THE DECAY OF THE PLASMA FOR A SUFFICIENTLY LOW PLASMA DENSITY, SO THAT THE AMPLITUDE OF THE OSCILLATIONS DROPPED SLOWLY WITH TIME. LOW FREQUENCY OSCILLATIONS WITH A FREQUENCY OF 200-500 KHZ WERE OBSERVED SIMULTANEOUSLY WITH THE HIGH FREQUENCY OSCILLATIONS. THIS FREQUENCY COINCIDES IN ORDER OF MAGNITUDE WITH THE DRIFT FREQUENCY OF ROTATION OF THE PLASMA IN THE MAGNETIC TRAP.

UNCLASSIFIED

USSR

UDC 533.95

VOLOSOV, V. I., PAL'CHIKOV, V. Ye., TSEL'NIK, F. A.

"On Flight Oscillations of Electrons in a Magnetic Trap"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 40, No 1, Jan 70, pp 134-137

Abstract: The accumulation and confinement of fast electrons up to 100 kev in a magnetic trap were studied. Oscillations associated with the oscillating motion of electrons between magnetic mirrors which limit the density of the hot plasma were the basic type of instability observed in the experiment. Several features of these oscillations are described and a qualitative explanation of the results is proposed. The experiments were conducted in a magnetic trap of diameter 40 cm and length 130 cm (the distance between mirrors). The magnetic field was stationary and varied from 100 to 300 oe at the center. In practically all experiments oscillations were observed with a frequency 20-30 MHz, which is close to the oscillation frequency of fast electrons between the magnetic mirrors. The oscillation frequency was independent of the magnetic field, the density of the trapped fast electrons, and the density of the cold plasma and neutral gas. The oscillations were observed both during the injection pulse and during the decay of the plasma for a sufficiently low plasma density, so that the amplitude

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VOLOSOV, V. I., et al., Zhurnal Tekhnicheskoy Fiziki, Vol 40, No 1, Jan 70, pp 134-137

of the oscillations dropped slowly with time. Low-frequency oscillations with a frequency of 200-500 kHz were observed simultaneously with the high-frequency oscillations. This frequency coincides in order of magnitude with the drift frequency of rotation of the plasma in the magnetic trap.

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1/2 024 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--FIELD ELECTRON EMISSION OF CYLINDRICAL CATHODES -U-

AUTHOR-(03)-VOLOSOV, V.I., LAZAREV, V.N., TERYAYEV, V.YE.

COUNTRY OF INFO--USSR

SOURCE--ZH. TEKH. FIZ. 1970, 40(4), 855-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ELECTRON EMISSION, TUNGSTEN, MOLYBDENUM, VOLT AMPERE CHARACTERISTIC, CATHODE

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DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1979 STEP NO--UR/0057/70/040/004/0855/0858

CIRC ACCESSION NO--AP0125568

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0125568

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FIELD ELECTRON EMISSION OF 6-8 MU W AND MO WIRES WITHOUT ANY OXIDE SURFACE FILM MOUNTED IN THE AXIS OF A 10-MM-DIAM. CYLINDRICAL TA ANODE (15 MM LONG) WAS STUDIED IN VACUUM OF 10 PRIME NEGATIVE4-10 PRIME NEGATIVE9 TORR VOLT AMPERE (V-A) CHARACTERISTICS ARE SHOWN. DISCONTINUITIES ARE FOUND IN THESE V-A CHARACTERISTICS, WHICH LEAD TO HYSTERESIS REGIONS IN THE CURVES. THE TIME DEPENDENCE OF THE FIELD EMISSION CURRENT IS PLOTTED. AT SMALL CURRENTS, A CURRENT INCREASE IS OBSD. IN THE 1ST HR, AND AT CURRENTS LARGER THAN 1 MA A DECREASE OCCURS IN THE 1ST HR. THE EMISSION OBSD. IS SOME ORDERS HIGHER THAN THAT CALCD. BY THE FOWLER NORDHEIM THEORY. THE PHENOMENA OBSD. MAY BE ATTRIBUTED TO MICRODEFORMATIONS OF THE CATHODE SURFACE UNDER THE ACTION OF THE ELEC. FIELD. PHOTOMICROGRAPHS OF FIELD EMISSION CATHODES AFTER OPERATION SHOW SUCH DEFORMATIONS.

FACILITY: INST. YAD. FIZ., NOVOSIBIRSK, USSR.

UNCLASSIFIED

USSR

UDC 534.0

VOLOSOV, V. M., and MORGUNOV, B. I., Chair of Mathematics

"On the Use of an Averaging Method for Calculating the Oscillations of Nonlinear Systems With Allowance for Energy Dispersion"

Moscow, Vestnik Moskovskogo Universiteta, Seriya III -- Fizika, Astronomiya, Vol 13, No 2, Mar-Apr 72, pp 238-240

Abstract: The article describes an averaging method which makes it possible to calculate the oscillatory modes of essentially nonlinear systems with one degree of freedom with allowance for energy loss in the material, assuming that the area of the hysteresis loop is a small quantity proportional to the small parameter $0 < \varepsilon \ll 1$.

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1/2 024 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--SOME RESULTS OF STUDY OF ORGANIZATION OF HELMINTHIC DISEASES CONTROL IN ROVNO AND CHERNOVTSY REGIONS OF THE UKRAINIAN SSR -U-
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIENCE OF ORGANIZATION OF HELMINTHIC DISEASES CONTROL IN THE ROVNO AND CHERNOVTSY REGIONS OF THE UKRAINIAN SSR WAS STUDIED. STATE SANITARY CONTROL OF THE SANITARY CONDITIONS IN RURAL COMMUNITIES IS WELL ORGANIZED, OWING TO WHICH AND TO REGULAR DEHELMINTHIZATION MEASURES THE INFESTATION RATE OF ASCARIASIS HAS BEEN REDUCED CONSIDERABLY IN A NUMBER OF AREAS. HELMINTHIC DISEASE CONTROL MEASURES ARE PLANNED FOR EACH SETTLEMENT. A CONSIDERABLE ROLE IN THEIR ORGANIZATION IN THE VILLAGE BELONGS TO SANITARY FELDSHER OF THE DISTRICT HOSPITAL. A NUMBER OF METHODS FOR BETTER ORGANIZATION OF HELMINTHIC DISEASES CONTROL. PARTICIPATION OF RURAL COUNCILS IN REALIZATION OF SANITARY MEASURES, GREATER ENLISTING COOPERATION OF RURAL MEDICAL WORKERS AND PUBLIC SANITARY WORKERS IN CONTROL OF SANITARY CONDITIONS ESPECIALLY OF DESINFECTION OF FECAL FERTILIZERS, COMBINATION OF HELMINTHIC DISEASE CONTROL MEASURES AND MEASURES FOR CONTROL OF ENTERIC INFECTIONS, ETC. FACILITY: INSTITUT MEDITSINSKOY PARAZITOLOGII I TROPICHESKOY MEDITSINY IM. MARTSINOVSKOGO. FACILITY: KIYEVSKIY INSTITUT EPIDEMIOLOGII, MIKROBIOLOGII I PARAZITOLOGII. FACILITY: ROVENSKAYA OBLASTNAYA I GORODSKAYA SANITARNO EPIDEMIOLOGICHESKIYE STANTSII.

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VOLOSYUK, YU. M., CHERNOV, G. K., KUKOZ, L. A., VASENIN, V. N.

"Granulated and Powdered Anodes"

Tr. Novocherkas. politekhn. in-ta (Works of Novocherkassk Polytechnic Institute), 1971, 239, pp 93-99 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12L342)

Translation: A study was made of the possibility of using ground metal as soluble anodes in electrolytic production or metal refining. The anode chamber of the electrolytic cell made from an insoluble material (vinyl plastic, plexiglass) was filled with granules of the processed metal. During operation, the chamber was filled with granules from a bin located above it. It was demonstrated that better movement of the granules as the solution process takes place is observed when their linear dimensions are less than half the chamber thickness. An increase in the anode surface as a result of using granules leads to a reduction in the overvoltage of solution of the anode metals and improves the conditions of purification of the electrolyte when refining the metals. BT_a ~ 100%.

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KUKOZ, F. I., VOLOSYUK, YU. M., BONDARENKO, A. V.

"Mechanism of the Heterogeneous Reaction in a Two-Layer Electrolyzer"

Tr. Novocherkas. politekhn. in-ta (Works of the Novocherkassk Polytechnic Institute), 1971, 239, pp 105-108 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12L289)

Translation: A study was made of the effect of various conditions of electrolysis in a two-layer electrolyzer on the mechanism of the cathode reaction. The upper layer in the bath is a 0.35% solution of oleic acid in toluene, and the lower layer is a solution of $FeCl_2$ with a concentration of 30 grams/liter.

A disc cathode was immersed in the upper layer, it was rotated and lowered so that the edge of the disc was approximately 0.5 mm from the interface of the liquids. Under these conditions, two paths of formation and growth of the metal powder are possible: a) nucleation and growth of the particles at the liquid-liquid interface in the upper layer without direct contact of them with the cathode; b) nucleation of the particles and further growth both directly on the cathode, and at the liquid interface in the upper layer. Since the growth of the particles directly on the cathode takes place with higher polarization of the cathode and growth of the particles at the liquid interface,

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KUKOZ, F. I., et al., Tr. Novocherkas. politekhn. in-ta, 1971, 239, pp 105-108

it is possible to assume that the most probable process of formation of the powder in a two-layer electrolyzer is growth of the particles at the liquid interface. The cathode is used to bring the electrons to the reaction zone. The specific nature of its metal and the selective adsorption of the components of the upper layer of the bath probably is a secondary factor.

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KUKOZ, F. I., VOLOSYUK, YU. M., BONDARENKO, A. V.

"Temporary Changes in a Two-Layer Electrolyzer"

Tr. Novocherkas. politekhn. in-ta (Works of the Novocherkassk Polytechnic Institute), 1971, 239, pp 99-104 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12L288)

Translation: A study was made of the temporary changes in a two-layer electrolyzer to obtain very fine metal powder. The upper layer in the baths is a hydrocarbon solution of surface-active substance, and the lower layer is an aqueous solution of the salt of the desired metal. It is demonstrated that during the contact between the organic and aqueous phases in the two-layer bath changes take place in the electrical characteristics of the bath. With an increase in depth of immersion of the cathode in the lower layer of the two-layer bath, beginning with some depth, the cell resistance does not in practice change and does not depend on the area of the cathode immersed in the lower layer. As polarization studies have shown, the polarization is very high on separation of the metals. The high values of the overvoltage are in accordance with the high resistance of the medium near the growing metal crystals. The variation in the resistance with submersion of the cathode below the interface of the layers is connected with variation of

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KUZOZ, F. I., et al., Tr. Novocherkas. politekhn. in-ta, 1971, 239, pp 99-104

the thickness of the part of the upper layer pulled by the cathode below the level of the interface and with the independence of the number of simultaneously growing crystals with respect to the magnitude of the submerged surface of the cathode. The decrease in overvoltage with contact time of the layers is in accordance with the decrease in the specific resistance of the solution of the upper layer of the bath.

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USSR UDC 621.762.2

KUKOZ, F. I., VOLOSYUK, YU. M., CHERNOV, G. K., and VLASOV, V. G.

"On the Question of Electrolysis of Ultrafine Ferromagnetic Powders"

Tr. Novocherk. politekhn. in-ta (Works of the Novocherkassk Polytechnical Institute), 1970, 203, pp 70-73 (from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11G332)

Translation: A study is made of the possibility of obtaining powder with maximum drawn out single-dome-shaped particles (ESD particles) under transient modes of electrolysis in a two-layer electrolyzer on a rotating cylindrical cathode. The study is carried out on a unit with pulsed electrolysis regime. It is assumed that such a regime ensures conditions of growth of filament particles. Preliminary data indicates a change in the structure of particles and an almost complete disappearance of dentriteness. Further investigation of the process of electrolysis of powders, particularly at very short pulses, is necessary. 3 ill., 8 bibl. entries. V. Chelnokov

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